CONFIDENTIAL

NPIC/P&DS-6-092
14 September 1966

MEMORANDUM FOR: Director, National Photographic Interpretation Center

SUBJECT : Request for Approval of Twin Light Source Light Table with Measuring Stage Project with [redacted] from FY 1967 Funding

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REFERENCE : Chief, Administrative Staff, O/DDI Memorandum of 4 February 1964 on: "Approval of R&D Activities."

1. The Twin Light Source Light Table Project has been prepared for your approval in order for contract negotiations to be carried out early in FY 1967. This Project calls for the development and fabrication of a specific light table with a measuring stage for viewing film chips.

2. The attached staff study, tab, and contract proposal present pertinent information and justification for this project.

3. It is recommended that this project be approved at a funding level of [redacted] in FY 1967.

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[redacted]
Colonel, USAF
Assistant for Plans and Development, NPIC

Attachments: a/s

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APPROVED: [redacted]
ARTHUR C. LUNDAHL
Director
National Photographic Interpretation Center

23 SEP 1966
DATE

Distribution:
Orig - Addressee
1 - NPIC/ES/LB
3 - NPIC/P&DS

Declass Review by NGA.

CONFIDENTIAL

GROUP 1
Excluded from automatic downgrading and declassification

3 August 1966

# TWIN LIGHT SOURCE TABLE WITH MEASURING STAGE

1. PROBLEM.

To obtain a capability of utilizing the recently developed Zoom 70 Microstereoscope's Advanced Rhomboid Attachment for viewing film chips.

2. FACTS BEARING ON THE PROBLEM.

a. Recently an attachment for the standard [redacted] 25X1
Zoom 70 Stereoscope was developed which, because of its superior features, will increase the optical performance (and useful life) of that stereoscope.

b. The optical design of this attachment resulted in a totally different physical configuration from the existing rhomboid attachment. This means that the new attachment cannot be operated on existing chip viewing light stages, e.g., [redacted] LB46. 25X1

c. The proposed light table will accommodate the [redacted] 25X1
25X1 [redacted] Zoom 70 in either its old or its new configuration and also
25X1 the existing [redacted] M-5 Stereoscopes.

d. The light table will provide a screw-driven translating stage to permit the controlled movement of properly aligned stereo pairs in unison without disturbing their relative orientation.

e. Since it is often desirable for the operator to make comparative measurements to a reasonable degree of accuracy, the incorporation of simple shaft encoders (mechanical counters) on the stage drives makes it possible to obtain crude measurements without first moving the chips to another instrument.

f. NPIC is currently purchasing large quantities of the new rhomboid attachment.

3. DISCUSSION.

a. Current Procedure - To view cut film (chips) with the [redacted] 25X1
25X1 [redacted] Zoom 70 Stereoscope, the photo interpreter typically employs
25X1 either a [redacted] illumination stage to illuminate the imagery. Both of these devices were specifically designed for utilization with the standard [redacted] Zoom 70. 25X1

A new rhomboid attachment for the Zoom 70 with a radically different optical configuration has been developed which cannot be used with the existing illuminators because the objective lenses of this attachment cannot be positioned over the lighted area of these illumination stages.

b. Origin of Concept - In FY-1965 a program was undertaken to develop a Twin Light Source Light Table. After a competitive evaluation, [redacted] was selected to construct the Table--the final design of which was selected months before the design of the advanced rhomboid assembly was conceived. The prototype has been delivered and accepted. This light table has found enthusiastic acceptance and continued usage since its arrival. Many of the features developed in this prototype will be incorporated in the proposed new version.

25X1

c. Proposed Program - This project will result in the fabrication of a prototype twin light source stereoscopic light table and one set of directly reproducible manufacturing drawings and specifications. The light table will incorporate the following characteristics:

a. The viewing area will be divided, by a removable partition, into two independent light sources for viewing images which differ in density.

b. The light sources are to be high-intensity cold cathode grids which will provide maximum brightness and evenness of illumination. Maximum intensity for each light source will be 2500 ft.-lamberts.

c. The light sources are to be adjustable by highly reliable dimming controls by which brightness can be varied over the entire range (2,500 - 200 ft.-lamberts) without visible evidence of flicker.

d. The mensuration scanning stage will be moved by lead screws having an accuracy of ±.0001'per inch. Digital read-out, as a 4-digit number, will be provided for each axis.

e. The microscope mounting post will be configured for use with the [redacted] Model II Zoom 70 Stereoscope, the [redacted] Model M-5 Stereoscope, and the [redacted] SZ Stereoscope. A large diameter mounting post will be provided for use with the [redacted] Zoom 70 Stereoscope fitted with the wide-span attachment so as to provide a higher degree of perpendicularity of optical axis to the scanning stage. Accommodation for these different optical instruments is accomplished by moving the microscope mounting post on a sliding member that will permit the operator to position the objective lenses of all of the microscopes over the lighted area of light table.

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d. Selection of Contractor - [redacted] submitted an unsolicited proposal to develop the Twin Light Source Light Table with Measuring Stage. In a previous competitive evaluation, they were selected to develop a prototype Twin Source Light Table--an instrument that is very similar to the proposed device--and were extremely successful in that development. It would be unrealistic in regard to both time and expense to continue the

25X1

development of this basic concept with a different contractor.

e. Program Phasing - The contractor will design, fabricate, and deliver the prototype light table in thirteen weeks after the contract date.

f. Coordination - This project has been closely coordinated with both the Photographic Analysis Group, NPIC and the Imagery Analysis Division, CIA. Coordination with other Center components will be established through the Technical Development Board. Care has been taken to avoid duplication of efforts by other government activities.

g. Alternatives - The only alternative to this approach would be to disregard the development of the Advanced Rhomboid Attachment and to continue to use the Zoom 70 in its conventional manner. Employment of the new attachment necessitates this development as soon as possible.

4. CONCLUSIONS.

The Advanced Rhomboid Attachment promises to be a significant advance in the utilization of the existing [redacted] Zoom 70 Stereoscopes. Since this instrument cannot be used for chip materials with our existing illumination stages a new light source must be developed. 25X1

5. RECOMMENDATIONS.

It is recommended that approval be granted to contract with

[redacted] 25X1

6. REFERENCES & ATTACHMENTS.

TAB A - Catalog Form

Attachment: [redacted] Proposal #SME-CG-58 Dated 5 March 1966 25X1

(When Filled In)

# R & D CATALOG FORM

DATE: 9 August 1966

1. PROJECT TITLE/CODE NAME
Twin Light Source Table With Measuring Stage

2. SHORT PROJECT DESCRIPTION
Development and fabrication of a Twin Light Source Table with measuring stage for viewing film chips.

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5. CLASS OF CONTRACTOR
Manufacturer

6. TYPE OF CONTRACT
Fixed Price

7. FUNDS
FY 19 $

8. REQUISITION NO.

9. BUDGET PROJECT NO.
02107

25X1

FY 1967

10. EFFECTIVE CONTRACT DATE *(Begin - end)*
September 1966-January 1967

11. SECURITY CLASS.
A.A. - Confidential
T. - Unclassified
W. - Unclassified

FY 19 $

12. RESPONSIBLE DIRECTORATE/OFFICE/PROJECT OFFICER TELEPHONE EXTENSION

25X1

DDI/NPIC/P&DS/

13. REQUIREMENT/AUTHORITY
Recent stereoscope developments which cannot be utilized with existing light tables require new source of illumination. This device will satisfy that need.

14. TYPE OF WORK TO BE DONE
Engineering Development

15. CATEGORIES OF EFFORT

| MAJOR CATEGORY | SUB-CATEGORIES |
|---|---|
| Viewing Systems | |

16. END ITEM OR SERVICES FROM THIS CONTRACT/IMPROVEMENT OVER CURRENT SYSTEM, EQUIPMENT, ETC.
One prototype light table will be delivered. No existing light table has the physical configuration that is required for utilization with the recently developed rhomboid attachment for the Zoom 70 Stereoscope. 25X1

17. SUPPORTING OR RELATED CONTRACTS *(Agency & Other)*/COORDINATION
Internal and external coordination is being maintained to insure that there is no duplication of effort within the Community.

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18. DESCRIPTION OF INTELLIGENCE REQUIREMENT AND DETAILED TECHNICAL DESCRIPTION OF PROJECT *(Continue on additional page if required)*
The recently developed Advanced Rhomboid Attachment for the Zoom 70 Stereoscope has found such wide acceptance that large quantities are being purchased for utilization with the existing stereoscopes. Presently no light table is available for viewing film chips and this development will satisfy this deficiency. Not only will the instrument accommodate the new and old configuration of the Zoom 70 but also will accommodate the existing SZ 25X1

25X1 and M-5 Stereoscopes.

19. APPROVED BY AND DATE

| OFFICE | DEPUTY DIRECTOR | DDCI |
|---|---|---|
| | | |